

Work Order ID 115278

March-24-14 8:02:35 AM

115278

Page 1

Item ID: D206-667-147TRN

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Assembly, Mid Fwd

Start Date: 3/24/14 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 4/07/14 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: MJSDate: 14-03-24

Tooling:

Date:

Run Start ***NR1***

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr

Revision Nbr

D206-667-147

A

100

100

Mori Seiki

Mori Seiki CNC Lathe Large

MORI SEIKI CNC LATHE LARGE

Memo

1-Fill tube with sand & install plugs DTxxxx on both ends as per Folio FB029

2-Turn first side as per Folio FB029

3-File down transition lines smooth.

FOLIO REV: BBDWG REV: A

0.00

0.00

110

110

QC

Quality Control

QC1- Inspect dimensions to dimension sheet

Memo

0.00

0.00

KC
14/03/24KC
14 03-25

March-24-14 8:02:35 AM

Page 2

Quality Control

Work Order ID 115278

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115278

Page 3

Item ID: D206-667-147TRN

Accept

N900040100

Setup

Start

NS1

Revision ID:

Stop

NS2

Item Name: Crosstube Assembly, Mid Fwd

Start Date: 3/24/14

Start Qty: 1.00

1

Cust Item ID:

Required Date: 4/07/14

Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run

Start

NR1

QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

NR2Sequence ID/
Work Center ID:Operation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

145

145

Crosstubes

Memo

0.00

Crosstubes

GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.

BL / 14-04-08

150

150

HandFXtube

Memo

0.00

Hand Finishing Crosstubes

1- PRESSURE WASH X-TUBE INSIDE AND OUT

2- ACID ETCH X-TUBE INSIDE AND OUT. USE RED SCOTCH BRITE

14-04-08

160

QC5- Inspect part completeness to step on W/O

0.00

160

QC

Memo

0.00

Quality Control

DAS
27
9-2914-04-08

Work Order ID 115278

March-24-14 8:02:35 AM

115278

Page 4

Item ID: D206-667-147TRN

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Assembly, Mid Fwd

Start Date: 3/24/14 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 4/07/14 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

170

170

Packaging

Packaging

Memo

Packaging

Identify and stock in kanban rack

Location: LG

0.00

0.00

JB 14-04-08

180

180

QC

Quality Control

QC21- Final Inspection - Work Order Release

Memo

0.00

0.00

14/4/91404-09

Picklist Print

March-24-14 8:02:40 AM

Page 1

Work Order ID: 115278

115278

Parent Item: D206-667-147TRN

D206-667-147TRN

Parent Item Name: Crosstube Assembly, Mid Fwd

Start Date: 3/24/14

Required Date: 4/07/14

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP rev:A 11.01.06 new issue DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D6002-115 Manufactured No

100 Each 47.0000 1 1

D6002-115

Crosstube Material

Location

Loc Qty

Loc Code

LG003

47

69794

15

75629

7

75637

8

75645

17

1 mm. L 14/03/24

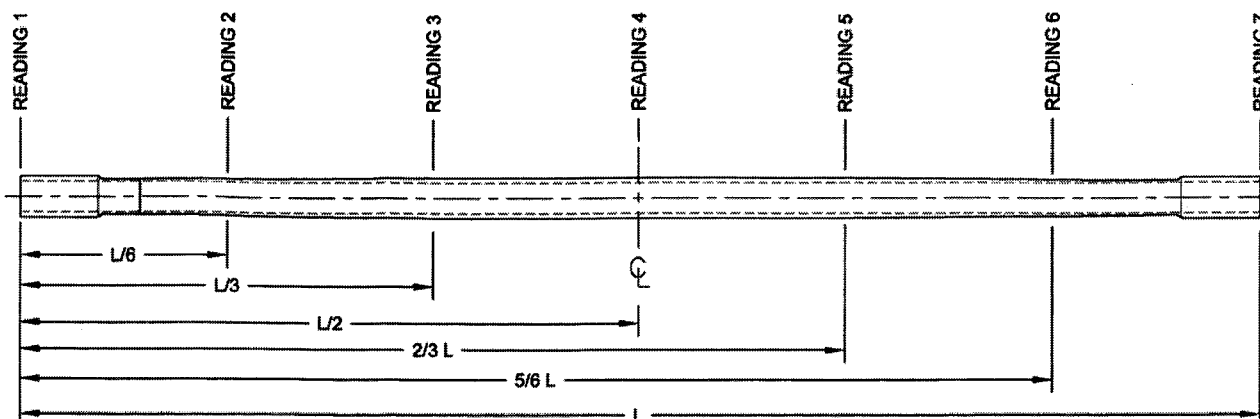
DART AEROSPACE LTD	Work Order:	115278
Description: Crosstube Assembly, Mid Fwd	Part Number:	D206-667-147
Inspection Dwg: D206-667-147 Rev: A		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

Inspection Sheet Drawing Dimension		Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.244	/			
	1.984	+0.005/-0.000	1.988	/			
	2.019	+0.005/-0.000	2.023	/			
	2.058	+0.005/-0.000	2.063	/			
	2.097	+0.005/-0.000	2.102	/			
	2.136	+0.005/-0.000	2.140	/			
	2.176	+0.005/-0.000	2.178	/			
	0.125	+/-0.010	.125	/			
	R0.063	+/-0.010	.063	/			
SIDE B	R2.00	+/-0.010	2.00	/			
	R0.063	+/-0.010	.063	/			
	4.438	+/-0.030	4.447	/			
	2.240	+0.005/-0.000	2.244	/			
	1.984	+0.005/-0.000	1.988	/			
	2.019	+0.005/-0.000	2.023	/			
	2.058	+0.005/-0.000	2.063	/			
	2.097	+0.005/-0.000	2.102	/			
SIDE B	2.136	+0.005/-0.000	2.140	/			
	2.176	+0.005/-0.000	2.178	/			
	0.125	+/-0.010	.125	/			
	R0.063	+/-0.010	.063	/			
	R2.00	+/-0.010	2.00	/			
	R0.063	+/-0.010	.063	/			
	4.438	+/-0.030	4.448	/			
	99.84	+/-0.020	99.84	/		tape	16-25

DART AEROSPACE LTD	Work Order:	115278
Description: Crosstube Assembly, Mid Fwd	Part Number:	D206-667-147
Inspection Dwg: D206-667-147 Rev: A		Page 2 of 2

WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"	.256	.251	.252	.259	.008	0.035"
READING 2 L= 11	.148	.141	.147	.158	.017	
READING 3 L= 22	.192	.186	.191	.198	.012	
READING 4 L= 49	.255	.250	.256	.261	.011	
READING 5 L= 22	.192	.178	.188	.205	.027	
READING 6 L= 11	.149	.139	.152	.161	.022	
READING 7 L= cuff	.251	.246	.258	.263	.017	

Calibration Result

Actual Block Thickness: .101 .730

Sitescan 250 Measured Thickness: .100 .730

Measured by: <i>mm L</i>	Audited by: <i>JW</i>	Preliminary Approval:
Date: 14/04/08	Date: 14-04-08	Date:

Rev	Date	Change	Revised by	Approved
B	11.06.21	New Issue	KJ	
C	12.06.04	Wall thickness form added	KJ	

Item	Qty	Part Number	Description
	-147		
1	X	D206-667-147	CROSSTUBE ASSEMBLY (206L MID FWD)
2	1	D6002-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6002-115
FINISHED LENGTH = 99.84±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-147" AND BATCH NUMBER ON
INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS).
- 7) WEIGHT: 15.0 lbs (-507 = 12.84)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY,
TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE
TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI
015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE
THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS
ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

115278MLS
1403-24

DEO ATTACHED

ECW HK-615
11.07.28

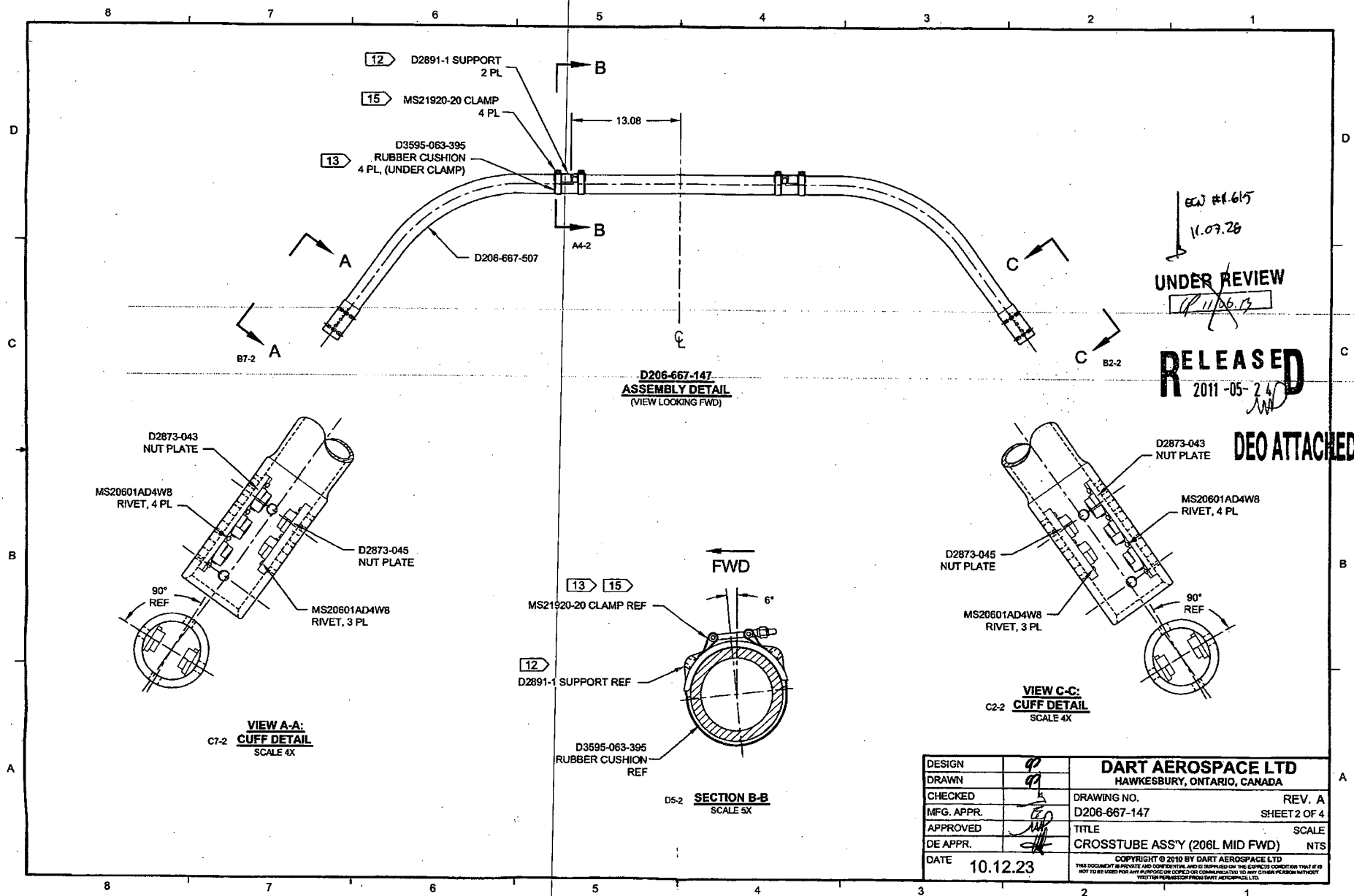
UNDER REVIEW

RELEASED
2011-05-23

A	NEW ISSUE	CP	10.11.23
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	10.12.23		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D206-667-147	REV. A SHEET 1 OF 4
TITLE CROSSTUBE ASSY (206L MID FWD)	SCALE NTS

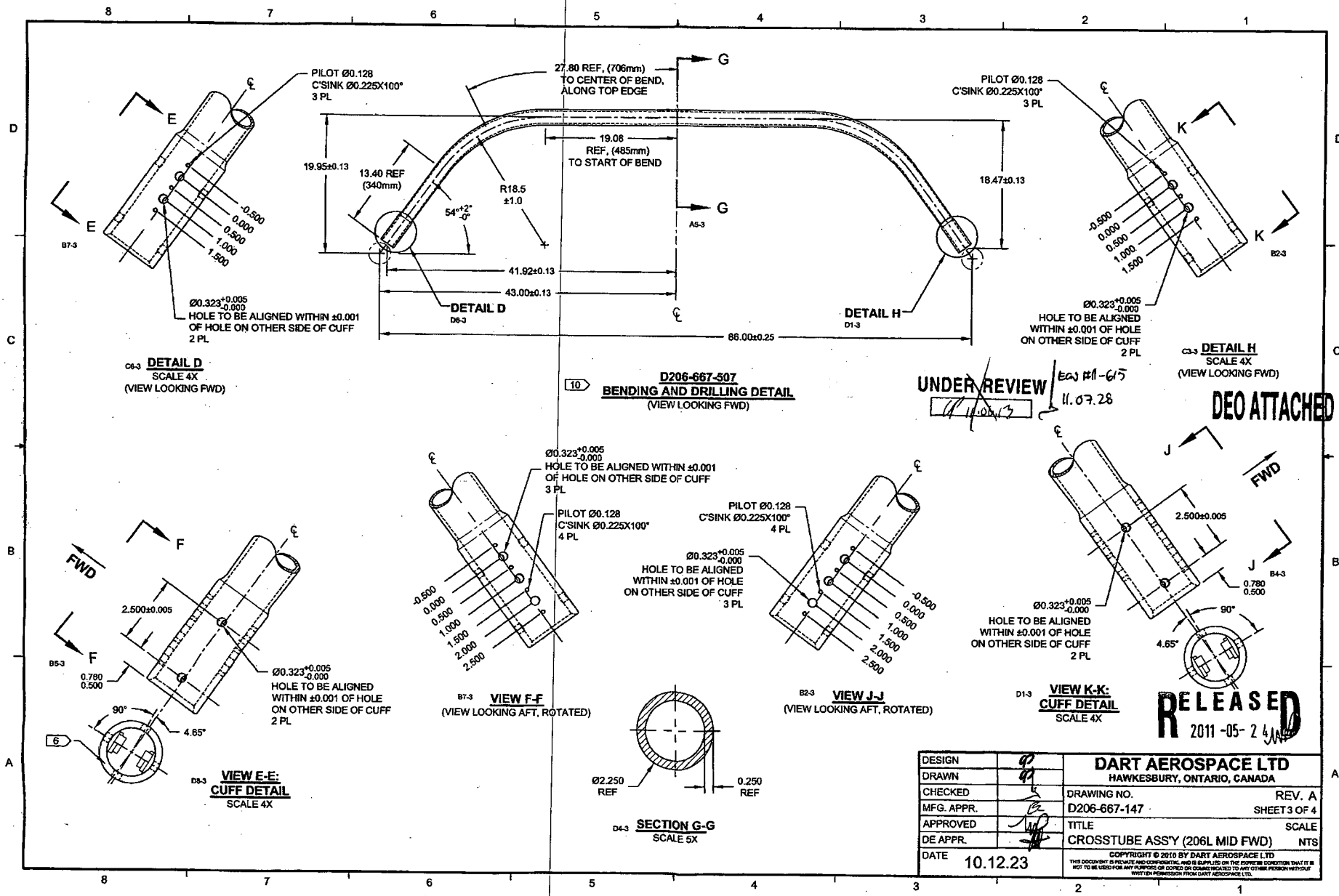
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ECW #1.615
11.07.28
UNDER REVIEW
11/10/13

RELEASED
2011-05-24

DEO ATTACHED



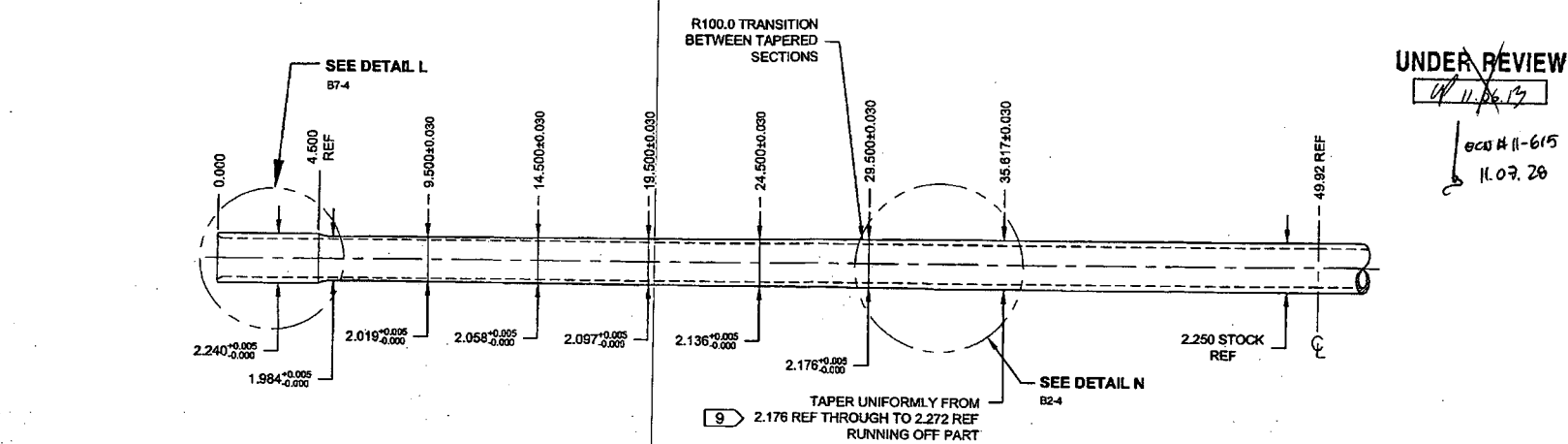
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RELEASED
2011-05-24

DESIGN		DART AEROSPACE LTD	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D206-667-147	SHEET 3 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASSY (206L MID FWD)	NTS
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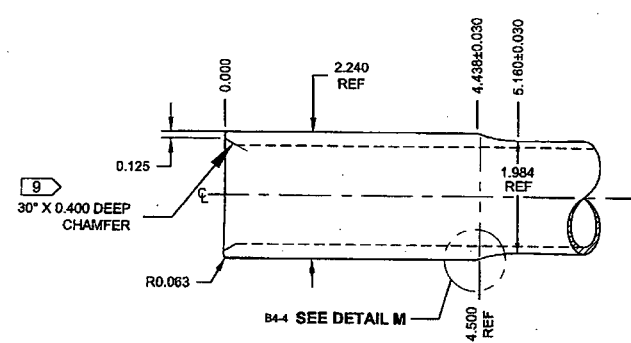
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D
C
B
A

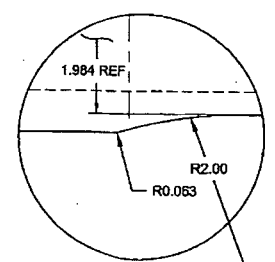


UNDER REVIEW
11.06.19
ECO # 11-615
11.07.20

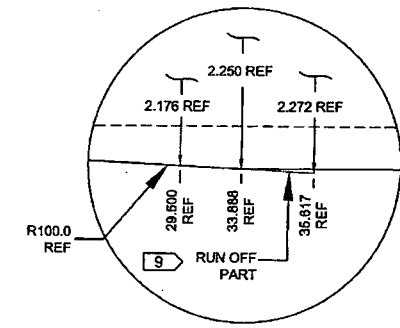
TURNING DETAIL



**DETAIL L:
CROSSTUBE CUFF**
D7-4
NOT TO SCALE



**DETAIL M:
CUFF TRANSITION**
A6-4
NOT TO SCALE



**DETAIL N:
TAPER RUN-OFF**
C4-4
NOT TO SCALE

DEO ATTACHED

RELEASED
2011-05-23

DESIGN	90	DART AEROSPACE LTD	
DRAWN	91	HAWKESBURY, ONTARIO, CANADA	
CHECKED	3	DRAWING NO.	REV. A
MFG. APPR.	15	D206-667-147	SHEET 4 OF 4
APPROVED	15	TITLE	SCALE
DE APPR.	15	CROSSTUBE ASS'Y (206L MID FWD)	NTS
DATE	10.12.23	<small>COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

8 7 6 5 4 3 2 1

DRAWING NO. D206-667-147	TITLE CROSSTUBE ASS'Y (206L MID FWD)	REV. A	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D206-667-147-A-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>9</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>JB</i>	APPROVED <i>MD</i>	DE APPR. <i>TH</i>			
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21	DATE 11.07.21			

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

Item	Qty -147	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
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NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

12) TO INSTALL D2891-1 SUPPORT: ABRABE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.

15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.

15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28
MD

DRAWING NO. D206-667-147	TITLE CROSSTUBE ASS'Y (206L MID FWD)	REV. A	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D206-667-147-A-2	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN AJS	CHECKED	MFG APPR.	APPROVED		DE APPR.		
DATE 12.08.02	DATE 12.08.02	DATE 12.08.02	DATE 12.08.02		DATE 12.08.02	DATE 12.08.02	

PURPOSE:

ADD ELECTRICAL GROUNDING STRAP

CHANGE:

PARTS LIST:

ITEM	QTY -147	PART NUMBER	DESCRIPTION
1	X	D206-667-147	CROSSTUBE ASSEMBLY (206L MID FWD)
10	2	AN742D36	CLAMP
11	2	MS9165-05	ANGLE BRACKET
12	2	MS21042L3	NUT (OR MS21042-3)
13	2	MS27039-1-08	SCREW
14	4	NAS1149C0332R	WASHER (OR AN960C10L)

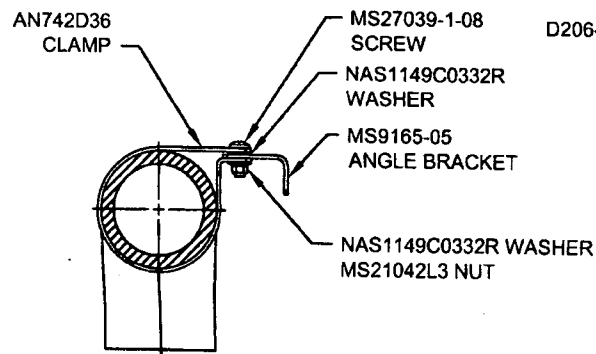
ADD

GENERAL NOTES:

- 16) MASK AREA UNDER CLAMP PRIOR TO PAINTING
- 17) SEAL EDGES WHERE AN742D36 CLAMP MEETS WITH THE CROSSTUBE USING SIKAFLEX-241/-291 OR MIL-S-8802 CLASS B2 OR PROSEAL 890 SEALANT
- 18) PERFORM RESISTANCE CHECK TO ENSURE MAX RESISTANCE IS 10 MILLIOHMS

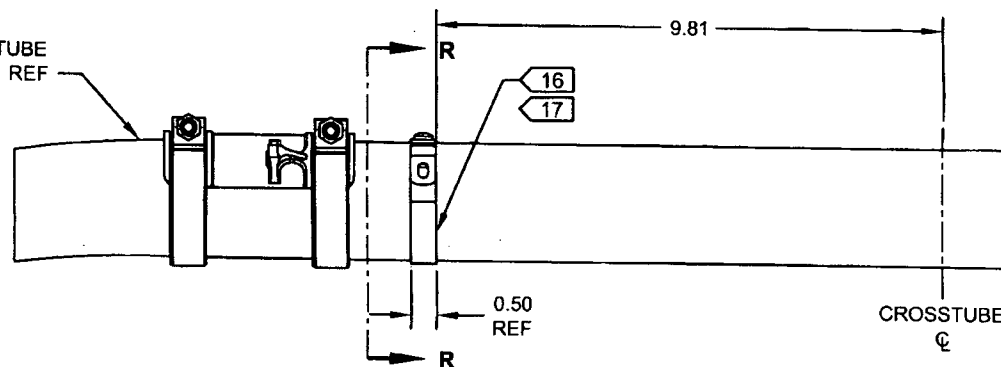
ADD

→ AFT



SECTION R-R

D206-667-507 CROSSTUBE REF



DETAIL P
BONDING STRAP INSTALLATION 2 PL

RELEASED
12.08.17
ECN 12-651